

Remarks/Arguments

Claims 1-25 remain in the application. Reexamination and reconsideration are respectfully requested.

In the Office Action mailed May 26, 2004, claims 1-5, and 18-25 were rejected under 35 U.S.C. 103(a) in view of Hepler (United States Patent No. 5,334,006). Applicants note that the outstanding rejection in view of Maus and Hepler were withdrawn, as Applicants arguments were found persuasive over the cited art. However, the Examiner stated that upon further consideration of Hepler, a new ground of rejection could be found. Specifically, the Examiner took the position that Hepler disclosed an interchangeable gate attached to place as cavity gates. It is not entirely clear what the Examiner meant by "attached to place". For the purposes of this response, Applicants assume that the Examiner is arguing that Hepler's hot sprue bushing with an interchangeable tip having multiple edge gates somehow qualifies as interchangeable gate design mold members which are removable attachable to at least one of the mold sections and wherein a first gate design mold member has an orifice having dimensions different from the dimensions of a second gate design mold member orifice. See claim 1.

Applicants herein respond to this new view of Hepler, as follows.

Claims 1 and 18 have been amended to more particularly point out and distinctly claim that the first and second mold gate design members are different in the dimensions of their respective orifices. Support may be found at page 3, lines 17-22 and page 6, lines 5-16.

The present invention discloses the use of **interchangeable** gate design mold members which function to allow the adjustment of polymer flow fronts emanating from the gates in

order that sequential products of different colors having pigments used to modify light reflectivity can be injection molded without surface defects (weld lines, visible flow fronts) yet not require major modifications to the mold between the molding of the products of different colors. Filled polymer compositions, particularly those containing various types of flat particles or flakes such as light reflective pigments as colorants are popular today to create a unique appearance as well as to eliminate the need for painting. The rheological characteristics of these polymer compositions vary widely from color to color, particularly in automobile applications, due to the physical nature of these colorants. However, it is not cost effective to have separate molds or even to modify to a mold to optimize the processing characteristics for each color.

According to this invention, the entry points for polymer to the mold can now be built to accommodate interchangeable mold members or **gate inserts**, which may either be open or closed or partially (i.e., the dimension of the orifice can be altered) to limit polymer melt flow into a specific area of a mold, thus allowing polymer flow fronts to be adjusted. This results in less visible weld lines, swirls and flow patterns of the filled polymer such that products having acceptable surface appearance can be produced. In this manner, when a color change is accomplished on a molding machine, only minor changes in rapid fashion need be made to the mold (interchanging gate inserts).

Or, in other words, by providing a mold with a "first gate design" and a "second gate design", one can **selectively control the filling pattern for the mold**, by adjusting, for example, the openings (orifices) on the respective gates. This versatility in the mold avoids

the need to change the **entire mold** should one desire to shift the filling pattern of the mold, economically, and without significant retooling and downtime.

Thus, an important aspect of the present invention is to provide such interchangeable gate inserts primarily designed to service a **mold**, to allow the adjustment of polymer flow fronts to improve the aesthetics of metallic appearing plastic molded articles.

Hepler, in United States Patent No. 5,334,006, does not disclose interchangeable gate design mold members as claimed herein. Hepler discloses a **heated sprue bushing 10** (See **Fig. 1**) having an **interchangeable tip 39 with multiple edge gates 35** for “controlling the temperature of the plasticized material as it is conveyed through the stationary plate or plates of an injection mold from the nozzle to the cavity gate(s)”. (Column 3, lines 42-45). The focus here is on multi-cavity applications (column 5, line 5). **The sprue brushing is part of the injection portion of the molding machine, and not part of the mold** in the sense that it is positioned between the injection molding machine and the mold.

More basically, with attention again directed at **FIG. 1** of Hepler the sprue bushing **10** contains a bore **36** for the flow of plastic which connects to branch channels **33** which feeds exit gates **35**. Significantly, even if one argues that sprue bushing **10** is an “interchangeable gate” in the sense that it can be removed, the reference fails to teach the limitation of the claims herein that a first gate design mold member has an orifice having dimensions different from the dimensions of a second gate design mold member orifice.

As the Examiner points out on page 2, in item 3 of the Office Action mailed May 26, 2004, “Hepler fails to teach or suggest a second gate design and threaded fasteners to attach the gate to the first or second mold member”. Applicants agree. Hepler teaches that the “tip

39 may have a variety of edge configurations, each of which has a plurality of equally spaced parts 49. FIG 4 illustrates a four-part configuration while FIG. 10 shows an eight-part embodiment. In each configuration, it is important to take care to assure that **each flow channel to each cavity** experiences the same thermal environment to assure uniformity of heating and part filling.” See column 7, line 63 to column 8, line 2 of Hepler (‘006) (emphasis added). Thus, changing edge gate configuration is directed at changing the **number** of cavities being filled and providing the same thermal environment **to each cavity**. There is no consideration of changing anything with respect to the size of the edge gate, and Hepler is simply not directed at providing a first and a second mold gate design member each having an orifice of different dimensions such that first and second polymeric materials having different light reflective materials may be successfully molded in a single mold.

Hepler is principally concerned with a hot sprue brushing that can be easily adapted or customized when there is not an exact match between off-the-shelf bushings and standard plate thicknesses. Hepler’s tip is provided with a plurality of edge gates **each of which communicate with a cavity** in a multi-cavity tool (column 3, lines 53-55 make this exceedingly clear). The drop length of the bushing, that is the distance from the nozzle side of the stationary plate to the tip, can be adjusted by threaded sleeves or collars of different lengths. No other teaching or suggestion regarding varying the dimensions of the openings of the edge gates is disclosed or suggested.

Given the above, and the fact that Hepler completely fails to teach or suggest the referenced features of the claims herein, it is respectfully submitted that the outstanding rejection of Hepler has been traversed, and the claims herein satisfy the requirements of 35

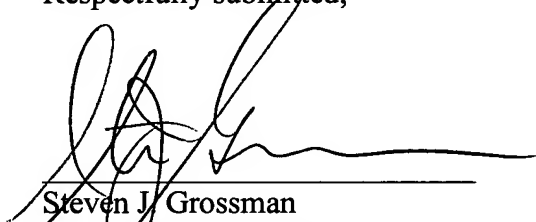
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Reply to Office Action of May 26, 2004

USC 103. Applicant respectfully submits that all claims currently pending in the application are believed to be in condition for allowance. Allowance at an early date is respectfully solicited.

In the event the Examiner deems personal contact is necessary, please contact the undersigned attorney at (603) 668-6560.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account No. 50-2121.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on August 26, 2004, at Manchester, New Hampshire.

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